

## News focus

# Malaria climbs the mountain

A new study finds disease outbreaks are increasing at higher altitudes around Mount Kenya, thought to be as result of global warming. **Nigel Williams** reports.

Malaria continues to be a scourge of many tropical countries and climate change seems to be adding to the problem. A seven-fold increase in cases of malaria on the slopes of Mount Kenya have been found by a team of Kenyan and British researchers. A 2°C increase in average temperatures around the mountain in the past 20 years has allowed the disease to creep into higher-altitude areas, where the local population of four million has had little or no previous exposure.

The researchers, funded by Britain's Department for International Development (DfID), found that the average temperature in the Kenyan Central Highlands had risen from 17°C in 1989 to 19°C today.

Before the 1990s malaria was absent from the region because the parasite can mature in the mosquito vectors only at a temperature above 18°C. However, malaria cases began among the population as average temperatures went over the 18°C tipping point. The number of people contracting malaria

during these outbreaks has increased seven times in the past decade. In 2005, malaria-carrying *Anopheles* mosquitoes were discovered in Naru Moro, more than 1,900 metres above sea level.

The team, from the Kenyan Medical Research Institute, said that, while similar outbreaks elsewhere had been attributed to multiple factors, including drug resistance and changes in land use, the only change here had been the rise in temperature. "The seven-fold increase is directly attributable to man-made climate change. One of the problems in making the link between climate change and malaria is that natural factors usually have a part to play," it said. Some people "claim



**Rising:** Malaria outbreaks are occurring at higher altitudes around Mount Kenya. (Photo: Nigel Pavitt/Photolibary.)

that the recent outbreak of malaria around Nairobi has been caused by climate change," it says. "In fact this probably has more to do with changes in drainage systems and population expansion. But in the Central Highlands the researchers have been able to rule these out and directly attribute the change to a 2°C rise in temperature."

The institute is using climate models to predict when epidemics might occur up to three months in advance, giving authorities time to stock up on medicines and warn the public of the dangers. It also uses church meetings and local health clinics to educate people in high-altitude areas on how climate change could be leading to the spread of malaria in their area.

In the west Kenyan highlands, where malaria has been present since the 1980s, mosquito nets have been provided for people to sleep under. The DfID has provided 14 million bed nets since 2001, but, because malaria is relatively new there, fewer than half of those who have bed nets use them, the department said.

The institute's work is one of 46 projects across Africa supported by the DfID. Douglas Alexander, the international development secretary, said: "The spread of malaria in the Mount Kenya region is a worrying sign of things to come."

Malaria has been a major target of international development funds. Earlier last year a partnership launched a project to provide anti-malarial drugs for people in sub-Saharan Africa. "By controlling malaria, we can improve school attendance and productivity, open new areas to business and tourism and reduce health costs," says Norway's foreign minister, Jonas Gahr Støre. The initiative, known as the Affordable Medicines Facility for malaria, was developed through Roll-Back Malaria — a broad partnership of public and private institutions, including the World Bank, Unicef, the Dutch government, the Global Fund, the Bill and Melinda Gates Foundation and the Clinton Foundation.

The Affordable Medicines Facility for malaria aims to improve access to life-saving malarial drugs and to replace drugs that are no longer as effective as they once were, says Tachi Yamada, president of the Bill and Melinda Gates Foundation global health program. "This is an important part of a broader effort to prevent and treat malaria," he said.

## Crunch decade

The next ten years could be crucial for a list of iconic species, according to the WWF. **Nigel Williams** reports.

The Chinese year of the tiger, which starts next month, will be used by the Worldwide Fund for Nature (WWF) to highlight the plight of the species, and several others they believe will require major conservation efforts to survive the decade. New studies suggest there may be as few as 3,200 tigers left in the wild and they occupy only 7 per cent of their original range, which has decreased by 40 per cent over the past 10 years. Continuing deforestation and poaching could see the loss of some populations imminently, as has happened with the Javanese and Balinese animals. Sea-level rise

also threatens the mangrove habitat of a key population in Bangladesh's and India's Sunderbans also under growing pressure from the growth in human populations.

Unsurprisingly, the WWF list the polar bear as under major threat. Shrinking sea ice, an essential component of the bears' environment and life cycle, is leading to loss of range as a result of climate change. Bolstering conservation measures are difficult given this key and irreversible habitat loss so the animal faces a very uncertain future in spite of the best will of conservationists. The Pacific walrus is also declining as a result of the same problem. In September last year, up to 200 dead walruses were spotted on the shore of the Chukchi Sea on Alaska's northwest coast. These animals use floating ice to give birth and raise their calves and



**Shrinking:** The tiger *Panthera tigris* is now confined to seven per cent of its former habitat. (Photo: The Hoberman Collection/Alamy.)